

Using community data to inform medical school admissions: a cohort study of medical students in Ottawa, Canada

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Abstract

Background: To advance social accountability in our medical school admissions, this study aims to examine how sociodemographic profiles of students admitted to undergraduate medicine at the University of Ottawa compare to those of the Ottawa regional community. **Methods:** We conducted a cohort study of our 2023 first-year MD students. We used data from the Ontario Medical Student Applicant Service and the Ottawa Neighbourhood Study to descriptively compare nine sociodemographic factors. **Results:** Of 183 students, our cohort demonstrated greater diversity in non-official first languages, second and third-generation status, and non-White racial identities. However, Black students (4.4% vs. 6.3%) were

underrepresented, and Indigenous students (4.4% vs. 3.2%) were likely underrepresented given the known underreporting of Indigenous identity in census data. Students from the highest-earning households (32.8% vs. 13.2%), and with parents working in education (30.1% vs 16.5%) or health (15.8% vs 7.5%) professions were overrepresented. **Conclusions:** This study demonstrates student underrepresentation for some sociodemographic factors and serves as an approach for other medical schools to consider admissions representation using local data.

Keywords: Medical school, Admissions, Reduced inequalities, Quality education, Social accountability.

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Background

Equitable health care relies on a diverse physician workforce, yet medical school admissions often fail to reflect the diversity of the populations they serve.¹ Research shows that physicians often prefer to provide care to populations with whom they share similar life experiences, and there is evidence that this concordance fosters comfort and familiarity and can improve population health outcomes.²⁻⁶ A systematic review of studies of sociodemographic and training factors and their association with practice patterns in the United States further suggests that recruitment of students from

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underserved areas could be an effective strategy for increasing the physician workforce in those regions.⁷

Recognizing these challenges, the Association of Faculties of Medicine of Canada emphasizes the importance of diversifying medical school admissions to better reflect the Canadian populace.⁸ This approach also aligns with Canadian medical schools' social accountability mandates, which aim to recruit students from culturally diverse backgrounds to better represent the populations within their service regions.^{9,10} However, there is

limited research examining how these policies contribute to representative medical student cohorts.¹¹

To address this gap, The University of Ottawa (uOttawa) Faculty of Medicine established a *Regional Profiles Working Group*, composed of faculty, community members and students, to advance social accountability in our admissions processes. This study will analyze the sociodemographic profiles of first-year students admitted to uOttawa's medical doctorate (MD) program, comparing them to those of the Ottawa region. By identifying disparities, the study aims to inform admissions strategies that enhance equity and representation within the physician workforce.

Methods

Study Design

We conducted a cohort study of all first-year MD students admitted to the uOttawa Faculty of Medicine during the 2023 application cycle. uOttawa's bilingual undergraduate medical education (UGME) program includes parallel streams in English and French. We identified our catchment area, also known as our primary region, based on provincially-defined boundaries for the Champlain Local Integrated Health Network, which until 2021 had a mandate to plan, fund and coordinate health services in our region. This study met research ethics board exemption criteria.

Data sources

We obtained survey data from Ontario Medical Student Applicant Service (OMSAS). The survey is mandatory for all Ontario medical school applicants and includes questions pertaining to first language, equity, diversity and inclusion (EDI) factors, and the postal code of residence during high school if the applicant completed secondary education in Canada. OMSAS participants provide informed consent during the application process, permitting the collection and institutional use of their personal information in compliance with privacy regulations. Applicants had the option to select “prefer not to answer” for all survey questions. uOttawa received these data from OMSAS in aggregate form, ensuring individual identities could not be reconstructed.

For regional comparison, we used data from Statistics Canada's 2021 Census of Population, held at the Ottawa Neighbourhood Study (ONS). ONS is a uOttawa research initiative established in 2006 that profiles natural neighbourhoods in Ottawa by

collecting, mapping, and analyzing neighbourhood-level data on the social determinants of health and health outcomes.¹²

Variables

We selected variables based on the OMSAS questions and their respective response categories, including: first official language spoken, gender identity, race, generation status, education of parent(s) or guardian(s), occupation of parent(s) or guardian(s), parents' or guardians' combined gross income, disability status, and sexual orientation. Some OMSAS variables included a “prefer not to answer” option, and some were not mutually exclusive, meaning that respondents could indicate more than one response.

For regional comparisons, we aligned these variables with data from the ONS for our entire priority region by deriving indicators that best matched the OMSAS response categories. We collapsed variables if required for meaningful comparisons, and when required to avoid reporting six individuals or less. Due to limitations in data availability, we were not able to directly compare some OMSAS variables to our priority region. For example, we used national-level data to estimate comparisons for sexual orientation.

We used descriptive statistics (counts and proportions) to describe and compare our cohort with the regional population. As population estimates varied, we did not report denominators for regional comparisons. Due to the study's focus on descriptive comparison and the absence of inferential statistical testing for hypothesis generation, statistical tests were not conducted. Instead, observed differences between the cohort and regional population were described narratively. We created tornado charts to display side-by-side comparisons, highlighting key disparities in sociodemographic factors. These visualizations provided an accessible and intuitive representation of the observed differences.

Results

There were 183 MD students in our cohort, all of whom responded to the OMSAS survey. A lower percentage of students reported English as their first official language compared to regional residents (61.7% vs 80.8%). While a similar proportion of students and regional residents spoke French as their first language (18.6% vs 16.0%), a far greater percentage of students reported a first language other than English or French (19.7% vs 1.1%).

We found differences in the self-reported race of our student cohort compared to our region's residents. The student cohort had higher proportions of East Asian (14.2% vs 3.9%), Middle Eastern (22.4% vs 5.2%), and South Asian (16.4% vs 4.5%) racial identities, compared to the region. There were lower proportions of Black students compared to our region's residents (4.4% vs 6.4%). Further, our proportion of Indigenous students was slightly greater than the general population (4.4% vs 3.4%), however we acknowledge that general population statistics regarding Indigenous status is underreported in census data.^{13, 14} While the proportions were similar for first generation status of our cohort and the region (26.8% vs 23.7%), our cohort included a much higher percentage of second-generation (43.7% vs 17.9%) and third-generation (24.6% vs 58.4%) individuals, compared to our region.

Sexual orientation among MD students closely reflected national estimates, with 12.0% of students identifying as 2SLGBTQIA+, 76.0% as straight/heterosexual, and 12.0% preferring not to answer. Similarly, gender identity among medical students was reflective of the general population within the city of Ottawa, with the exception of a lower reported proportion of cis men within the medical school cohort (38.8% vs 49.7%). A much lower proportion of students self-reported living with a disability compared to the Ontario population (4.3% vs 28.0%).

We found overrepresentation of students with parents having completed higher education compared to the region, including completion of a bachelor's degree (51.4% vs 25.0%), masters (29.0% vs 10.9%), doctorate (8.7% vs 1.9%) and professional degrees (29.0% vs 0.9%). Parental occupations also differed from the Ottawa region, as parents or guardians of students were overrepresented in business, finance, and administrative (27.3% vs. 18.7%); education, law, social, and community service (30.1% vs. 16.5%); and health occupations (15.8% vs. 7.5%). Conversely, they were underrepresented in sales and service occupations (12.6% vs. 21.2%) compared to the Ottawa region. Our students were also disproportionately likely to come from the highest income households (32.8% vs 13.2%) and less likely to come from the lowest income households (5.8% vs 15.3%).

Discussion

This study comparing uOttawa MD students and the residents in the medical school priority region highlights potential disparities across several sociodemographic factors. Our bilingual program with parallel English and French streams successfully facilitated a representative Francophone cohort, aligning with our mandate. Further, our student cohort had greater diversity in terms of non-official first languages, second and third generation status, and non-white self-reported race. Despite having specific admissions streams for Black and Indigenous students, we found that Black students were underrepresented, and Indigenous identities were likely underrepresented, given they are already known to be underreported in census data and in the current physician workforce, as were people reporting disabilities.¹³ Trends related to Black and Indigenous groups prevailed despite concerted efforts to recruit via community consultation, representation of Black and Indigenous individuals in admissions committees and interview panels, and targeted mentorship programs in partnership with the Indigenous Program Office and the Black Medical Student Association. We found an overrepresentation of students from more educationally and economically privileged backgrounds, particularly those with parents in education and health professions.

The greater racial diversity in our cohort compared to the regional population was most pronounced among East Asian, Middle Eastern and South Asian groups. This diversity was also reflected in a greater number of students with second and third generation status and may reflect general EDI efforts in the admissions process or a greater interest in medical careers among these communities.^{15, 16} However, underrepresentation of Black and Indigenous students likely arises from persistent systemic educational disparities, disproportionate socioeconomic challenges and a persistent lack of mentorship, which limit the effectiveness of targeted admissions initiatives.¹⁷⁻¹⁹ These findings align with existing literature suggesting that students from higher socioeconomic backgrounds are more likely to pursue medical education due to financial resources and educational support they receive.¹⁷ To address these barriers, some medical schools have implemented initiatives aimed at increasing accessibility for these students. For example, the University of Toronto's Community of Support program provides mentorship, financial guidance and academic support to those from underrepresented backgrounds, including

Indigenous, Black and economically disadvantaged students.²⁰

The proportion of 2SLGBTQIA+ students aligns with national estimates, though the "prefer not to answer" category in the OMSAS survey may obscure true representation, possibly due to discomfort or privacy concerns in disclosing sexual orientation.²¹ Gender identity of students was largely proportional to that of the City of Ottawa, although there were fewer reported cis men and a proportion of students opted out of answering. Self-reported disability status within our cohort was significantly lower than that of Ontario, which likely reflects differences in average age between the populations, however this could indicate the need to increase accommodation during admissions processes.^{22, 23}

Limitations

There are several potential limitations to our findings. First, OMSAS relies on self-reported data which may be subject to biases, including 35% of students choosing "I do not know" or "Prefer not to answer" for parental income and 8.9% selecting "Prefer not to answer" for disability status, possibly due to concerns regarding discrimination in the admissions process. Second, comparisons to

regional sociodemographics required nuanced synthesis and extrapolation from provincial or national data, limiting cohort comparability, especially for non-mutually exclusive responses. Finally, our data is from a single cohort at one medical school, which may make it less generalizable to other settings.

Conclusions

This study underscores the influence of socioeconomic and cultural factors on medical school admissions and the need for diversity initiatives and further outreach and recruitment to underserved groups to enhance equity, diversity, inclusion, and accessibility in medical education. Our methodology can serve as an approach for other medical schools who want to use regional data as a benchmark for representation with the aim of graduating a representative cohort of physicians who will serve their communities. Further, to progress from a state of responsiveness to community needs and shift towards responsibility and further accountability, we need a comprehensive approach to obtain additional qualitative data directly from the community to fully grasp the underlying causation of trends in student admissions profiles.^{24, 25}

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